

# **Asbestos Constituent Analysis**

## **MVA Project No. 5394**

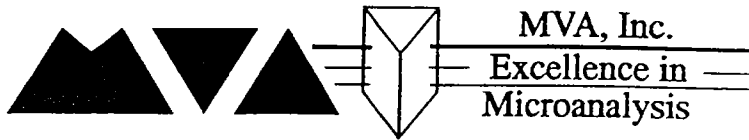
**W.R. Grace Claim #10661**

**DGS Claim #1011591**

**Building Address:  
31 East Channel St., Stockton**

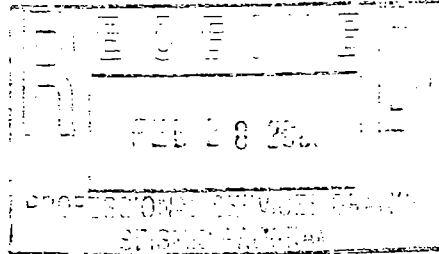
**Prepared by:**

**Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, 4<sup>th</sup> Floor  
West Sacramento, CA 95605**



27 February 2003

Mr. Dan Hood, Project Manager  
Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, Suite 4-430  
West Sacramento, CA 95605



Re: Asbestos Constituent Analysis, Contract No. 3056115; MVA Project No. 5394

Dear Mr. Hood:

Enclosed is our report for product formula matching conducted on thirteen (13) samples of acoustical plaster collected from various buildings. In three samples we found no asbestos (two from 120 S. Spring Street and one from 2501 Harbor Blvd, Costa Mesa, Building 3234). Two samples had compositions inconsistent with any US Gypsum or W.R. Grace product (the sample labeled DSA 3671 and the sample from 28 Civic Ctr. Plaza, Santa Ana). One sample from 2501 Harbor Blvd., Costa Mesa, Bldg. 3265 had several layers and we were unable to unambiguously separate them for constituent analysis.

One sample from 2501 Harbor Blvd., Costa Mesa, Bldg. 3265 was a positive match for W.R. Grace's "Zonolite Acoustical Plastic." The remaining samples were a positive match for W.R. Grace's MonoKote (MK-3).

Thank you for consulting MVA, Inc. Please contact us if you have any questions.

Sincerely,

Randy Boltin  
Senior Research Scientist

Tim B. Vander Wood, Ph.D.  
Executive Director

\\Leslie\\mva\_data\\PROJECTS\\Proj5300\\5394\\rpt022703\_5394.doc

**Report of Results: MVA5394**

**Constituent Analysis  
Various Buildings**

**Prepared for:**

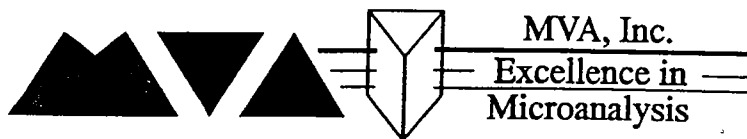
**Mr. Dan Hood, Project Manager  
Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, Suite 4-430  
West Sacramento, CA 95605**

**Prepared by:**

**MVA, Inc.  
5500 Oakbrook Parkway, Suite 200  
Norcross, GA 30093**

**27 February 2003**

\\Leslie\mva\_data\PROJECTS\Proj5300\5394\rpt022703\_5394.doc



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Microanalysis**

**5500 Oakbrook Parkway #200  
Norcross, GA 30093  
770-662-8509 • FAX 770-662-8532  
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## **Report of Results: MVA5394**

### **Constituent Analysis Various Buildings**

#### **Introduction**

This report contains the analytical results and their interpretation for thirteen samples of suspected asbestos containing building materials from various buildings that were sent to MVA, Inc. under Agreement #3056115. The samples were first examined by polarized light microscopy (PLM) including microchemical tests. If necessary, the samples were further analyzed by scanning electron microscopy (SEM) combined with energy dispersive x-ray spectrometry (EDS), and by analytical electron microscopy (AEM) utilizing EDS and/or selected area electron diffraction (SAED). Wet chemistry was also performed on certain samples to determine a soluble weight percent. The results of all analyses and a data interpretation sheet for the samples are included as an appendix to this report.

Product formula matches were derived from comparison between determined sample composition and available product formulas. In any case where more than one product formula matched the determined composition, each match was noted. If no available product formula matched the determined sample composition, a 'no match' was indicated.

#### **Results**

The results of product formula matching for the samples are found in Table 1. The data on which the matches rely are included on the Data Interpretation page in the appendix.

**Table 1: Summary of Results****MVA Project No. 5394****Group 1****Product Formula(s) Matched:** No Asbestos Detected

Client Sample ID	MVA Sample ID
120-1-01 (120 S. Spring St., LA)	MVA5394-N0034
120-2-03 (120 S. Spring St., LA)	MVA5394-N0036
3277-2-05 (2501 Harbor Blvd. Costa Mesa)	MVA5394-N0046

**Group 2****Product Formula(s) Matched:** No Match

Client Sample ID	MVA Sample ID
DSA 3671-FP-1803-01	MVA5394-N0030
28-2-03 (28 Civic Center Plaza, Santa Ana)	MVA5394-N0040
3265-1-01 (2501 Harbor Blvd. Costa Mesa)	MVA5394-N0042

**Group 3****Product Formula(s) Matched:** Zonolite Acoustical Plastic

Client Sample ID	MVA Sample ID
3234-1-3 (2501 Harbor Blvd., Costa Mesa)	MVA5394-N0044

**Group 4****Product Formula(s) Matched:** MonoKote (MK3)

<b>Client Sample ID</b>	<b>MVA Sample ID</b>
34-1-8-03-FP-1 (901 Stockton State Building)	MVA5394-N0022
969-1-8-FP-03-1 (7650 S. Newcastle Rd. Bldg. 969)	MVA5394-N0024
969-1-8-03-AT-1 (7650 S. Newcastle Rd. Bldg. 969)	MVA5394-N0026
1023-1-8-03-1 (7650 S. Newcastle Rd. Bldg. 969)	MVA5394-N0028
DSA 5-FP-1803-01	MVA5394-N0032
28-1-01 (28 Civic Center Plaza, Santa Ana)	MVA5394-N0038

**MVA, Inc.**

**Data Interpretation**

**Group:** 4

**Sample ID:** MVA5394-N0022, -N0024, -N0026, -N0028, -N0032, -N0038

**Project:** State of California

**Location:** Various

**Type:** N/A

**Construction Date:** Not Provided

**Product Formula Matched:** "Monokote (MK3)"

**Manufacturer:** W.R. Grace

<b>Constituent Identified</b>	<b>Estimated Weight Percent (Avg)*</b>
Chrysotile	~11%
Vermiculite	~34%
Gypsum including Limestone/ Precipitated Carbonate	~55%

**Comments:** Minor limestone/precipitated carbonate is included with gypsum.  
\*Estimated weight percent based on light microscopy in conjunction with acid soluble test result.

**MVA, Inc.****PLM Constituent Analysis****Date:** 1/9/03**MVA #:** 5394**Location:** 901 Stockton State Building, Auditorium,  
Mechanical Room**Sample I.D. #:** N0022**Client Sample I.D. #** 34-1-8-03-FP-1**Examination using the stereomicroscope:** White powder with brass-colored flakes

<u>CONSTITUENT</u>	<u>%</u>	<u>CONSTITUENT</u>	<u>%</u>	<u>CONSTITUENT</u>	<u>%</u>
Fibers:		Pigment:		Fillers:	
Cotton	---	Binders:		Diatoms	---
Fiberglass	---	Kaolinite (-)	---	Iron Chromite	---
Filament	---	Montmorillonite (-)	---	Iron Oxide	---
Wool	---	<b>Gypsum</b>	~52	<b>Limestone</b>	*
Mineral Wool	---	<b>Anhydrite</b>	<1	<b>Magnetite</b>	<1
Hair	---	Portland Cement	---	Mica	---
Paper/Wood	---	Lime (hydrated)	---	Perlite	---
Chem. Proc.	---	<b>Precipitated</b>		Synthetic Foam	---
Mech. Proc.	---	<b>Carbonate</b>	*	Pumice	---
Synthetic	---	Starch (-)	---	Quartz	---
				Talc	---
				<b>Vermiculite</b>	~38

Asbestos Minerals

<b>Chrysotile</b>	~10	Anthophyllite	---	Tremolite/	
Amosite	---	Crocidolite	---	Actinolite	---

**Comments:** \*Minor limestone/precipitated carbonate is included in the gypsum percentage.**Analyst:** Randy Boltin



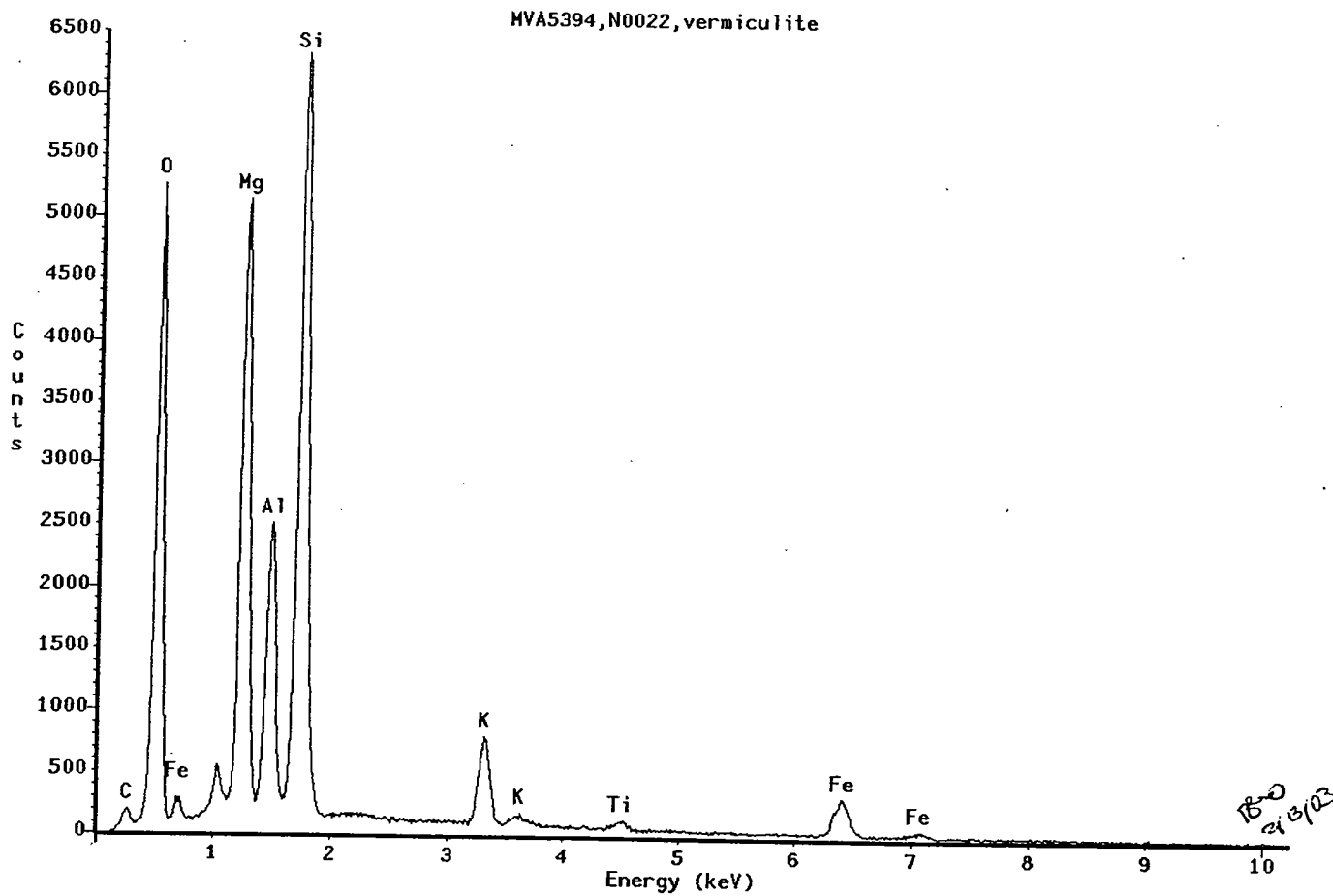
**MVA, Inc.****SEM Constituent Analysis****Date:** 2/13/03**MVA #:** 5394

\*Particles identified are consistent in morphology and elemental composition with known references.

**Sample I.D. #:** N0022

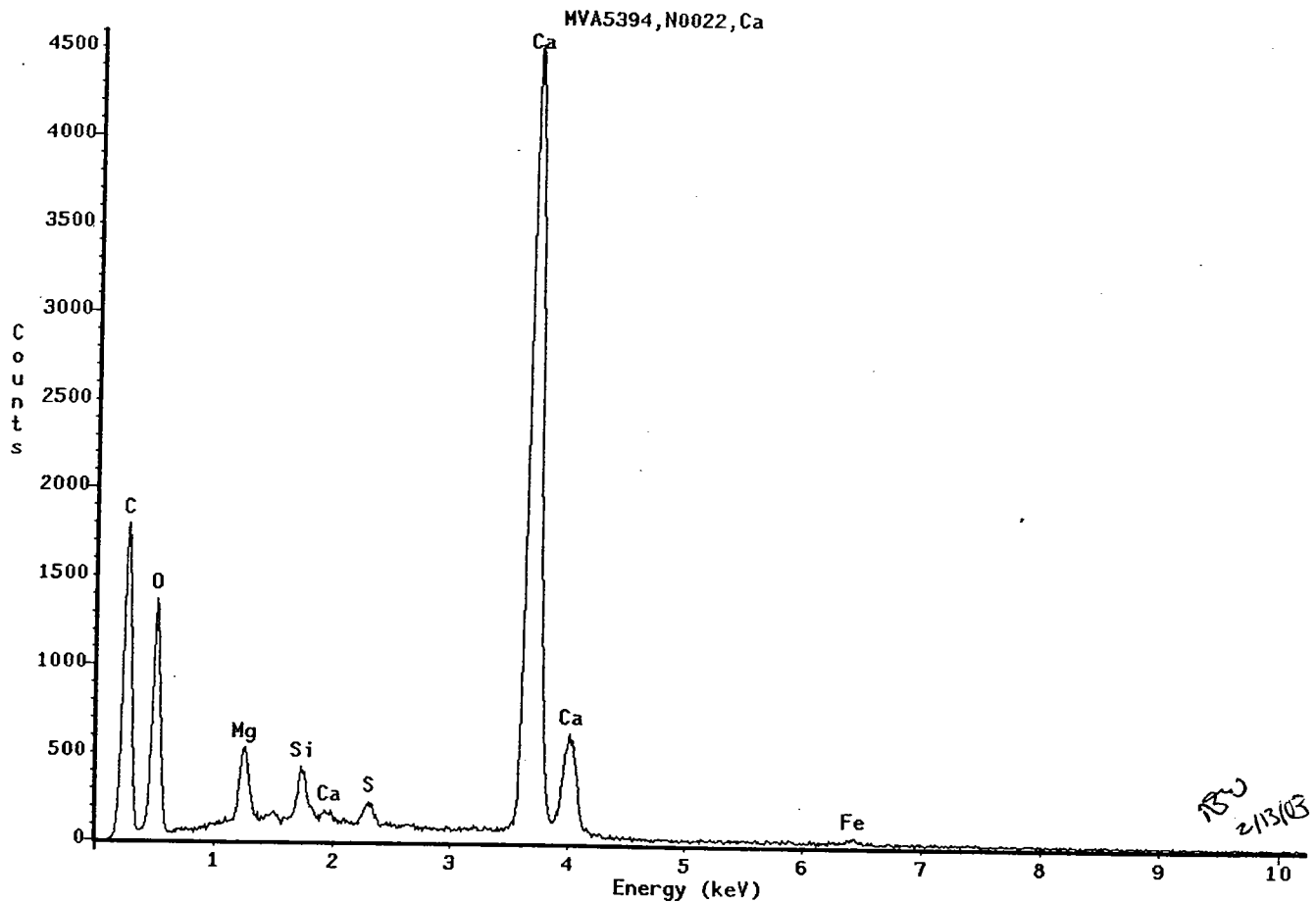
<u>CONSTITUENT</u>	<u>PRESENT</u>	<u>CONSTITUENT</u>	<u>PRESENT</u>
<b>Fibers:</b>		<b>Pigments:</b>	
Glass	---	Titanium	---
Mineral Wool	---	Barium	---
Other	---	Zinc	---
		Other	---
<b>Fillers:</b>		<b>Binders:</b>	
Diatoms	---	Clay	
Fe Particle	---	Kaolin	---
Mica	---	Montmorillonite	---
Perlite	---	Other	---
Talc (elong)	---	<b>Ca</b>	Trace
Talc (platy)	---	Ca-Mg	---
Si	---	<b>Ca-S</b>	Common
<b>Vermiculite</b>	Common	Ca-Si	---
Other	---	Ca-Al-Si	---
		Ca-Fe-Al-Si	---
<b>Asbestos Minerals:</b>		Mg-Fe	---
Amosite	---	Al-Si	---
Anthophyllite	---	Others	---
<b>Chrysotile</b>	Common		
Crocidolite	---		
Tremolite/Actinolite	---		

**Comments:** One Si particle observed but not recorded.**Microscopist:** Tim B. Vander Wood

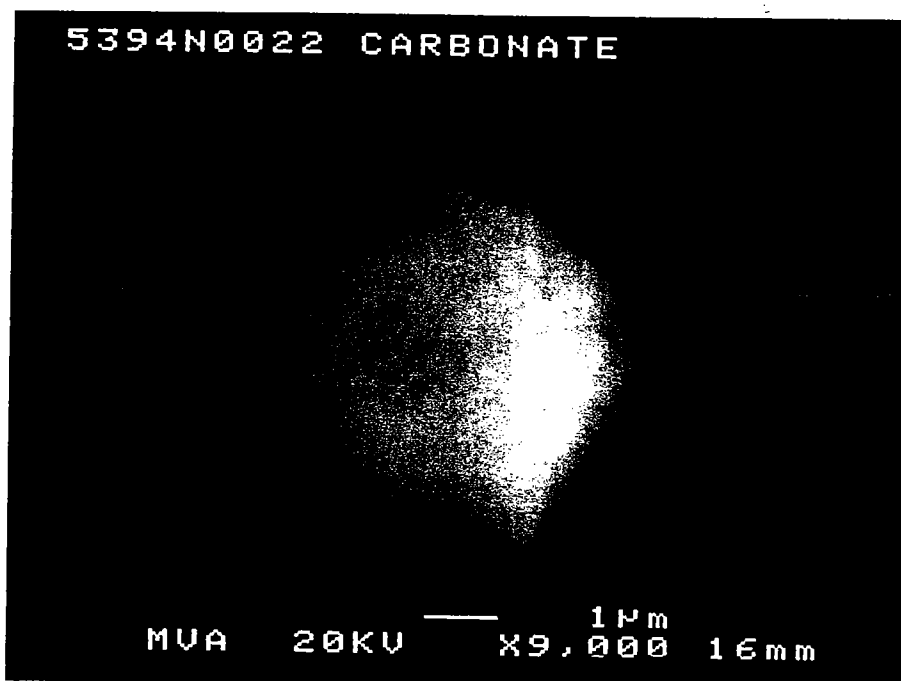


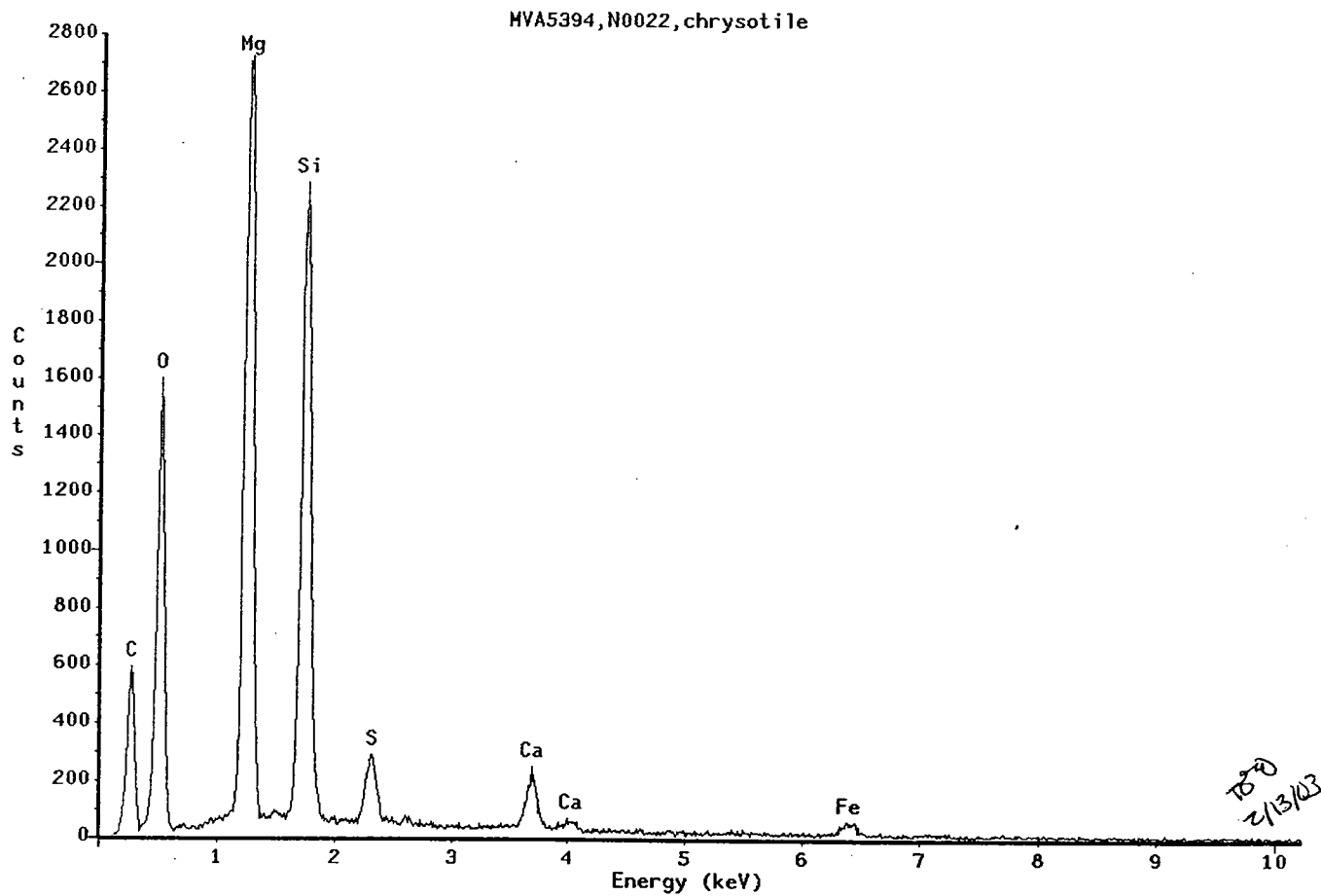
EDS spectrum (above) and SEM micrograph (below) of vermiculite.  
MVA5394-N0022





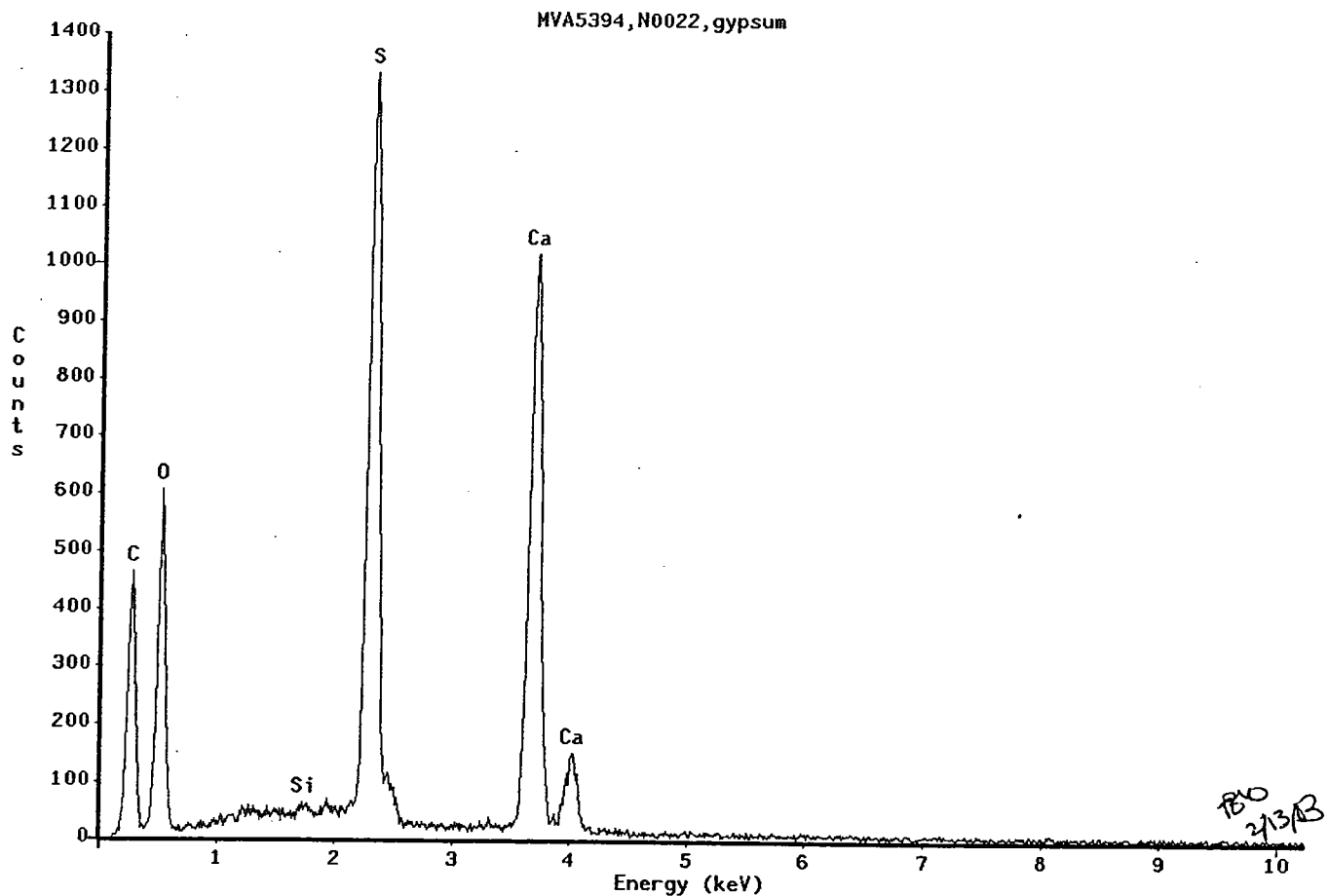
EDS spectrum (above) and SEM micrograph (below) of a calcium particle.  
MVA5394-N0022





EDS spectrum (above) and SEM micrograph (below) of chrysotile.  
MVA5394-N0022





EDS spectrum (above) and SEM micrograph (below) of gypsum.  
MVA5394-N0022



**MVA, Inc.****AEM Constituent Analysis****Date:** 2/21/03**MVA #:** 5394**Sample I.D. #:** N0022

<u>CONSTITUENT</u>	<u>PRESENT</u>	<u>CONSTITUENT</u>	<u>PRESENT</u>
<b>Fibers:</b>		<b>Pigments:</b>	
Glass fibers	---	TiO <sub>2</sub>	Trace
Others	---	BaSO <sub>4</sub>	---
		ZnS	---
		Other	---
<b>Fillers:</b>		<b>Binders:</b>	
Diatoms	---	Clay	
Fe Particle	Trace	Kaolin (xltln)	---
Mica	---	Kaolin (calc.)	---
Perlite	---	Smectite	---
Talc (elong)	---	Ca (ppt)	Trace
Talc (platy)	---	Ca (xltln)	---
Quartz	---	Ca-Mg, particle	---
Vermiculite	Common	Ca-S (ppt)	---
Other- Platy Mg-Si	Trace/Minor	Ca-S (xltln)	Common
<b>Asbestos Minerals:</b>		Ca-Si (ppt)	---
Amosite	---	Ca-Si, particle	---
Anthophyllite	---	Ca-Al-Si	---
Chrysotile	Common	Ca-Fe-Al-Si	---
Crocidolite	---	Mg-Fe, particle	---
Tremolite/Actinolite	---	Mg-S	---
		Si (ppt)	---
		Si (xltln)	---
		Others	---

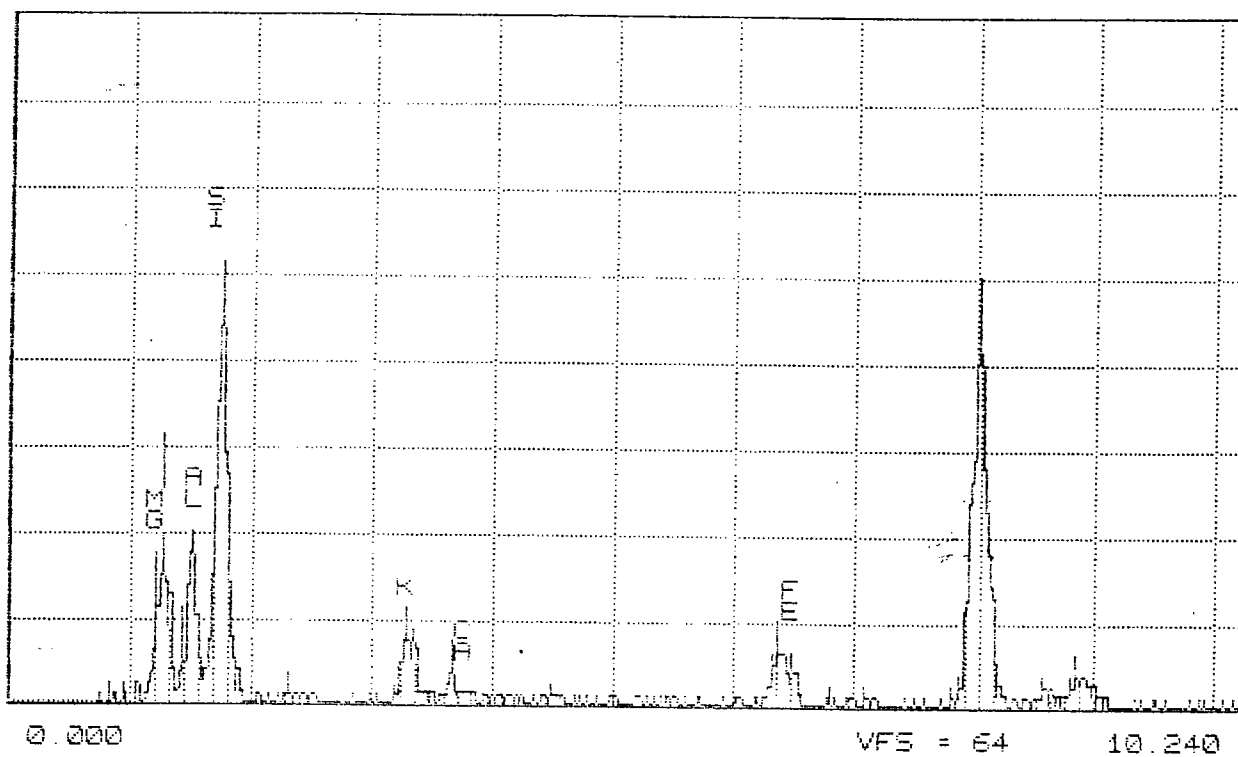
**Comments:** Platy Mg-Si particles are a probable contaminant of chrysotile.**Analyst:** P. Few/R. Boltin

MVA INC.

THU 27-FEB-03 10:36

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000.



66 MVR5394 N0022 VERMICULITE

VFS = 64

10.240

WRB  
2-27-07

AEM spectrum of vermiculite.  
MVA5394-N0022

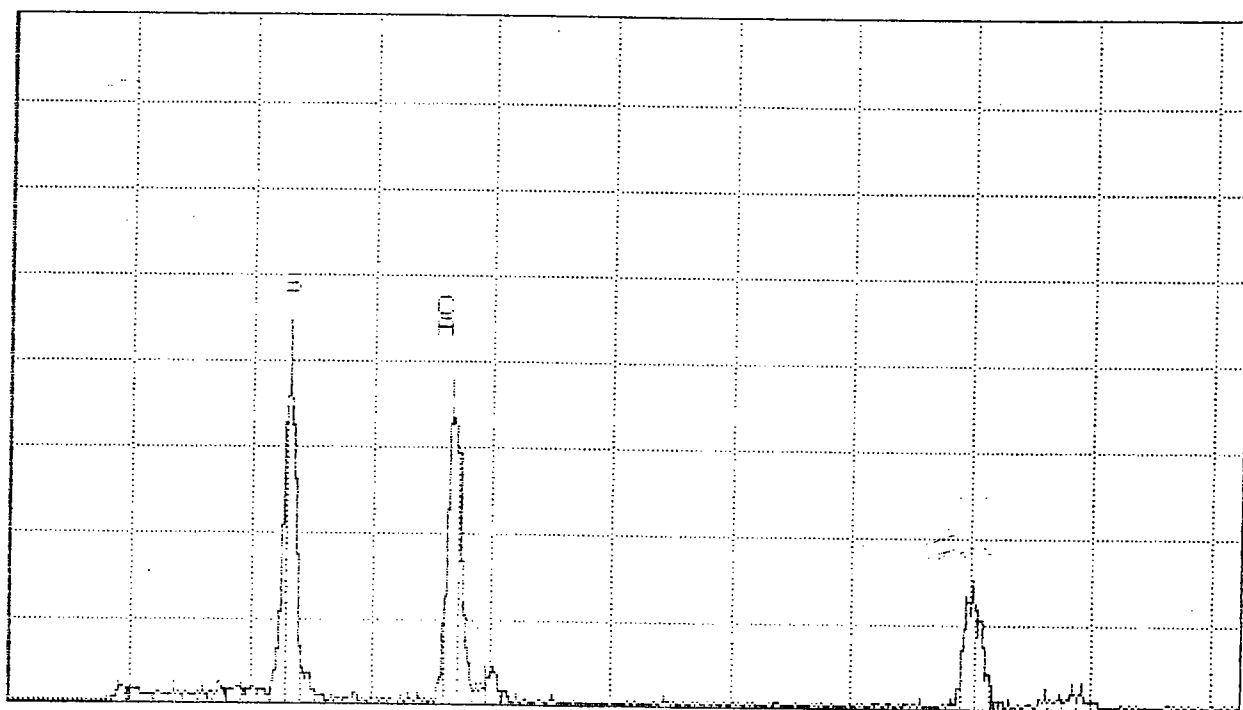
MVA INC.

THU 27-FEB-03 10:41

Cursor: 0.000keV = 0

ROI

(1) 0.000: 0.000.



0.000

VFS = 129

10.240

60

MVA5394 N0022 CA-S PARTICLE

4/43  
2-27-03

AEM spectrum of a Ca-S particle.  
MVA5394-N0022

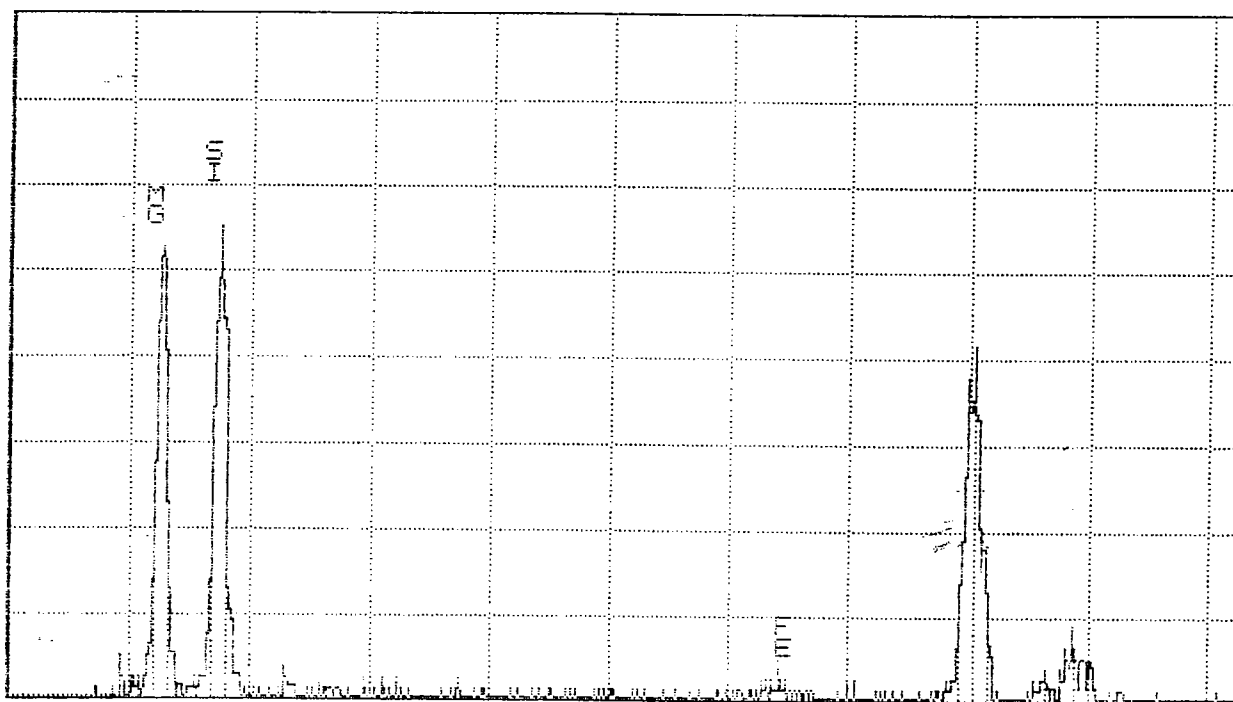


MVA INC

THU 27-FEB-03 10:34

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000.



0.000

VFS = 64

10.240 *WRB*  
*2-27-03*

60

MVA5394 N0022 CHRYSOTILE

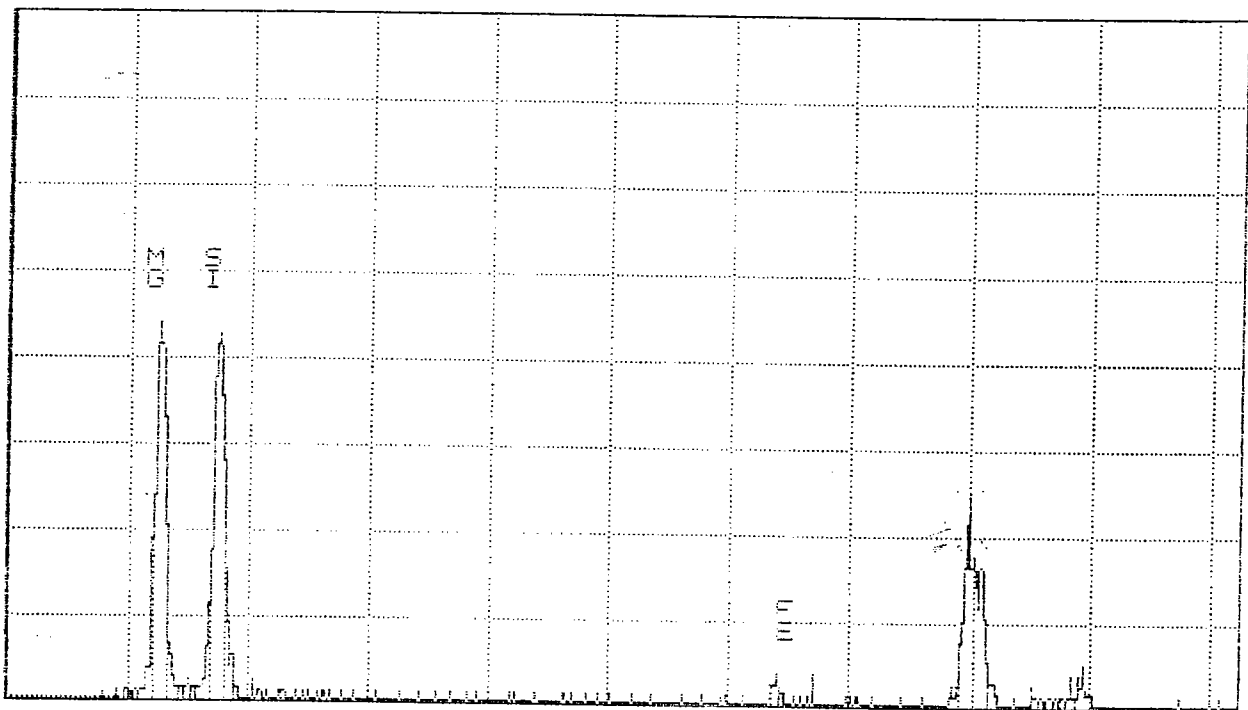
AEM spectrum of chrysotile.  
MVA5394-N0022

MVA INC.

THU 27-FEB-03 10:31

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000.



0.000

VFS = 64

10.240

61

MVA5394 N0022 PLATY MG-SI PARTICLE

*WAG*  
*2-27-03*

AEM spectrum of a platy Mg-Si particle.  
MVA5394-N0022

**MVA, Inc.**

**Acid Soluble Weight Percent Determination**

**Date:** 2/6/03

**MVA#:** 5394

**Sample I.D.#:** N0022

**Initial Weights**

1.	Vial w/lid	4.75066
2.	Vial + Sample	5.00206
3.	Sample Weight (S2-S1)	0.25104
4.	Filter (in container)	10.37729

**Weights Following Acid Treatment**

5.	Filter + Sample	10.46821
6.	Insoluble Residue (S5-S4)	0.09092
7.	Soluble Fraction (S3-S6)	0.16012

**Calculation**

8.	% Soluble (S7/S3) x 100%	~63.8%
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**Comments:**

**Analyst:** Bill Turner



# **Asbestos Constituent Analysis**

## **MVA Project No. 5394**

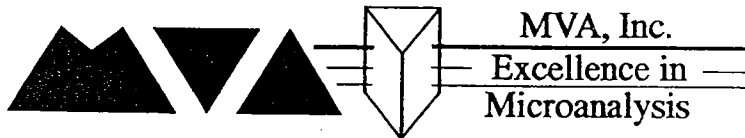
**W.R. Grace Claim #10662**

**DGS Claim #1011577**

**Building Address:  
744 P St., Sacramento**

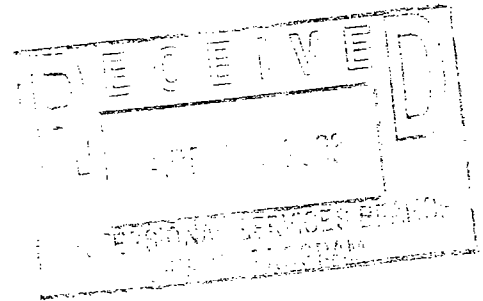
**Prepared by:**

**Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, 4<sup>th</sup> Floor  
West Sacramento, CA 95605**



28 March 2003

Mr. Dan Hood, Project Manager  
Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, Suite 4-430  
West Sacramento, CA 95605



Re: Asbestos Constituent Analysis; MVA Project No. 5394

Dear Mr. Hood:

Enclosed is MVA, Inc.'s Report of Results of our analyses of samples we have received from you for identification of product manufacturer.

Thank you for consulting MVA, Inc. If you have any questions about this report, please do not hesitate to call either of us at 770-662-8509, or by email at [tvanderwood@mva-inc.com](mailto:tvanderwood@mva-inc.com). We will retain your samples for thirty days prior to disposing of them.

Sincerely,

A handwritten signature in black ink, appearing to read "Randy Boltin".

Randy Boltin  
Senior Research Scientist

A handwritten signature in black ink, appearing to read "Tim B. Vander Wood".

Tim B. Vander Wood, Ph.D.  
Executive Director

**Report of Results: MVA5394**  
**Asbestos Constituent Analysis**

**Prepared for:**

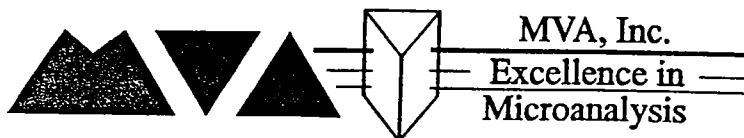
**Department of General Services  
Real Estate Services Division  
Professional Services Branch  
707 3<sup>rd</sup> Street, Suite 4-430  
West Sacramento, CA 95605**

**Prepared by:**

**MVA, Inc.  
5500 Oakbrook Parkway, Suite 200  
Norcross, GA 30093**

**28 March 2003**

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## **Report of Results: MVA5394**

### **Asbestos Constituent Analysis**

#### **Introduction**

The samples were first examined by polarized light microscopy (PLM) including microchemical tests. If necessary, the samples were further analyzed by scanning electron microscopy (SEM) combined with energy dispersive x-ray spectrometry (EDS), and by analytical electron microscopy (AEM) utilizing EDS and/or selected area electron diffraction (SAED). Wet chemistry was also performed on certain samples to determine a soluble weight percent.

Product formula matches were derived from comparison between determined sample composition and available product formulas. In any case where more than one product formula matched the determined composition, each match was noted. If no available product formula matched the determined sample composition, a 'no match' was indicated.

#### **Results**

Product formula matches are noted in Table 1 on the following page. Table 2 contains MVA sample number assignments and additional details of the analytical results from these samples as well as the samples previously submitted. An appendix containing all of the analytical results not previously forwarded follows.



**TABLE 1.** Product Formula Matching Results

The following samples were a positive match for W.R Grace's Monokote (MK-3):

OB8-022603-01	OB9-0220603-02
ASH-030603-01	SCC-AD-A-030503-02
CCI-030503-01	CCI-030503-05
CYA-02	

The following samples were a positive match for W.R. Grace's Zonolite Acoustical Plastic:

SSRH030303-01 Layer A	SSRH-030303-03 Layer A
-----------------------	------------------------

The following samples were a positive match for W.R, Grace's Zonolite Finish Coat:

SSRH030303-01 Layer B	SSRH-030303-03 Layer B
-----------------------	------------------------

The following sample was a positive match for U.S. Gypsum's Imperial QT Texture Finish:

PH-RES-030403-02

**Table 2.** Detailed Sample Descriptions

Location	Sample ID	MVA-ID	Findings	first reported
120 Spring St	120-1-01	5394-N0034	No Asbestos	2/27/03
120 Spring St	120-1-02	5394-N0036	No Asbestos	2/27/03
2501 Harbor Blvd.	3234-1-03	5394-N0044	WRG Zonolite Acoustical Plastic	2/27/03
2501 Harbor Blvd.	3265-1-01	5394-N0042	No match	2/27/03
2501 Harbor Blvd.	3277-2-05	5394-N0046	No Asbestos	2/27/03
28 Civic Center Plaza	28-1-01	5394-N0038	WRG Monokote (MK3)	2/27/03
28 Civic Center Plaza	28-2-03	5394-N0040	No ID-Inhomogeneous	2/27/03
7650 S. Newcastle DSA 1023	1023-1-8-03-AT-1	5394-N0028	WRG Monokote (MK3)	2/27/03
7650 S. Newcastle DSA 969	969-1-8-03-AT-1	5394-N0026	WRG Monokote (MK3)	2/27/03
7650 S. Newcastle DSA 969	969-1-8-03-FP-1	5394-N0024	WRG Monokote (MK3)	2/27/03
Agricultural Annex	AA-022603-01		Not Analyzed	
Agricultural Annex	AA-022603-02	N0326	No Asbestos	3/18/03
DMV HQ Bldg East DSA 3671	3671-FP-1803-01	5394-N0030	No Match	2/27/03
DMV HQ Bldg East DSA 3671	3671-FP-1803-02		Not Analyzed	
OB8	OB8-022603-01	N0327	WRG Monokote (MK3)	3/18/03
OB8	OB8-022603-02		Not Analyzed	
OB9	OB9-022603-01		Not Analyzed	
OB9	OB9-022603-02	N0320	WRG Monokote (MK3)	3/18/03
Resources Bldg DSA 5	5-FP-1803-01	5394-N0032	WRG Monokote (MK3)	2/27/03
Stockton OB DSA 901	34-1-8-03-AT-1	5394-N0020	USG Audicote	1/13/03
Stockton OB DSA 901	34-1-8-03-FP-1	5394-N0022	WRG Monokote (MK3)	2/27/03
Patton State Hospital	Admin #3	N0402	No Asbestos	3/18/03
Patton State Hospital	Admin #4	N0403	No Asbestos	3/18/03
Patton State Hospital	Admin Annex#1	N0400	No Asbestos	3/18/03
Patton State Hospital	Admin Annex#2	N0401	No Asbestos	3/18/03
Patton State Hospital	Audit#5	N0404	No Asbestos	3/18/03
Patton State Hospital	Audit#6	N0405	No Asbestos	3/18/03
DFA HQ	FA-031303-01	N0498	No Asbestos	3/18/03
DFA HQ	FA-031303-02	N0499	No Asbestos	3/18/03
Napa State Hospital	NSH-258-030303-01		Not Analyzed	
Napa State Hospital	NSH-258-030303-02	N0431	No Asbestos	3/18/03
Napa State Hospital	NSH-168-030303-01	N0432	No Asbestos	3/18/03
Napa State Hospital	NSH-168-030303-02		Not Analyzed	
Peddler Hills	PH-DORM-030403-01	N0434	No Match	3/18/03
Peddler Hills	PH-DORM-030403-02		Not Analyzed	
Peddler Hills	PH-RES-030403-01		Not Analyzed	
Peddler Hills	PH-RES-030403-02	N0437	USG Imperial QT Texture Finish	3/18/03
Northern Youth Corr Rec Center	NYCRC-MW-030403-01	N0438	No Asbestos	3/18/03
Northern Youth Corr Rec Center	NYCRC-MW-030403-02		Not Analyzed	
CHP Training Center	CHP-MPC-030403-01		Not Analyzed	
CHP Training Center	CHP-MPC-030403-02	N0441(A)	No asbestos	3/18/03
CHP Training Center	CHP-MPC-030403-02	N0441(B)	Insufficient sample	3/18/03

Location	Sample ID	MVA-ID	Findings	first reported
Stockton Facility	SF-030403-01	N0458	No Match	3/18/03
Stockton Facility	SF-030403-02		Not Analyzed	
Stockton Facility	SF-030403-03	N0456	No Asbestos	3/18/03
Stockton Facility	SF-030403-04		Not Analyzed	
Sierra S Reg HQ Shop	SSRH-030303-01	N0450(A)	WRG Zonolite Acoustical Plastic	3/18/03
Sierra S Reg HQ Shop	SSRH-030303-01	N0450(B)	WRG Zonolite Finish Coat	3/18/03
Sierra S Reg HQ Shop	SSRH-030303-02		Not Analyzed	
Sierra S Reg HQ Warehouse & Offices	SSRH-030303-03	N0452(A)	WRG Zonolite Acoustical Plastic	3/18/03
Sierra S Reg HQ Warehouse & Offices	SSRH-030303-03	N0452(B)	WRG Zonolite Finish Coat	3/18/03
Sierra S Reg HQ Warehouse & Offices	SSRH-030303-04		Not Analyzed	
Sierra S Reg HQ Warehouse & Offices	SSRH-030303-05	N0454	No Asbestos	3/18/03
Sierra S Reg HQ Warehouse & Offices	SSRH-030303-06	N0455	No Asbestos	3/18/03
OH Close Youth Corr Facility	OHYCF-030303-01	N0444	No Asbestos	3/18/03
OH Close Youth Corr Facility	OHYCF-030303-02		Not Analyzed	
OH Close Youth Corr Facility	OHYCF-030303-03	N0446	No Asbestos	3/18/03
OH Close Youth Corr Facility	OHYCF-030303-04	N0447	No Asbestos	3/18/03
OH Close Youth Corr Facility	OHYCF-030303-05	N0448	No Asbestos	3/18/03
OH Close Youth Corr Facility	OHYCF-030303-06		Not Analyzed	
Karl Holton Youth Corr D&A Trtmnt Fac	KHYC-030303-01	N0442	No Asbestos	3/18/03
Karl Holton Youth Corr D&A Trtmnt Fac	KHYC-030303-02		Not Analyzed	
Atascadero Warehouse	ASH-030503-01	N0469	No Asbestos	3/18/03
Atascadero Warehouse	ASH-030503-02	N0470	No Asbestos	3/18/03
Atascadero New Treatment Unit	ASH-030603-01	N0471	WRG Monokote (MK3)	3/18/03
Atascadero New Treatment Unit	ASH-030603-02		Not Analyzed	
Sierra Conservation Center	SCC-AD-A-030503-01		Not Analyzed	
Sierra Conservation Center	SCC-AD-A-030503-02	N0468	WRG Monokote (MK3)	3/18/03
CCI Bldg J	CCI-030503-01	N0473	WRG Monokote (MK3)	3/18/03
CCI Bldg J	CCI-030503-02		Not Analyzed	
CCI Bldg P	CCI-030503-03	N0475	No Asbestos	3/18/03
CCI Bldg P	CCI-030503-04	N0476	No Asbestos	3/18/03
CCI Bldg B	CCI-030503-05	N0477	WRG Monokote (MK3)	3/18/03
CCI Bldg B	CCI-030503-06		Not Analyzed	
CCI Vocational	CCI-030503-07	N0479	No Asbestos	3/18/03
CCI Vocational	CCI-030503-08	N0480	<1% Amosite. No match	3/18/03
Deuel Vocational Institute	DVI-IW-030703-01	N0481	No Match	3/18/03
Deuel Vocational Institute	DVI-IW-030703-02		Not Analyzed	
DMV HQ Sacramento	DMV031203-01	N0496	No Match	3/18/03
Dmv, HQ Sacramento	DMV031203-02	N0497	No Asbestos	3/18/03
Employment Development Annex	EDA-022603-01	N0323	No Asbestos	3/18/03
Employment Development Annex	EDA-022603-02	N0324	No Asbestos	3/18/03
Central Office	CO-022603-01	N0321	(LAYERED) No Asbestos	3/18/03
Central Office	CO-022603-02		Not Analyzed	
Ventura Youth Corr Fac	CYA-01		Not Analyzed	
Ventura Youth Corr Fac	CYA-02	N0409	WRG Monokote (MK3)	3/18/03
LA EDD-S. Broadway	EDD-01	N0406	No Asbestos	3/18/03

Location	Sample ID	MVA-ID	Findings	first reported
LA EDD-S. Broadway	EDD-02		Not Analyzed	
Agricultural Annex	AA-022603-01		Not Analyzed	
Agricultural Annex	AA-022603-02	N0326	No Asbestos	3/18/03
CA Inst. For Women	CAFE#1	N0393	No Asbestos	3/18/03
CA Inst. For Women	CAFE#2	N0394	No Asbestos	3/18/03
CA Inst. For Women	RC Admin #7	N0399	No Asbestos	3/18/03
CA Inst. For Women	WARE#1-#3	N0395	No Asbestos	3/18/03
CA Inst. For Women	WARE#1-#4		Not Analyzed	
CA Inst. For Women	WARE#2-#5	N0397	No Asbestos	3/18/03
CA Inst. For Women	WARE#2-#6		Not Analyzed	

**MVA, Inc.**  
**Data Interpretation**

**Sample ID:** MVA5394 - N0320

**Project:** State of California

**Location:** OB9

**Type:** Fireproofing

**Construction Date:** Not Provided

**Product Formula Matched:** "Zonolite Monokote (MK-3)"

**Manufacturer:** W.R. Grace & Company

Constituent Identified	Estimated Weight Percent (Avg)*
Chrysotile	~13%
Vermiculite	~28%
Gypsum & Minor Carbonate	~59%

**Comments:**

\*Estimated weight percent based on light microscopy in conjunction with acid soluble test result.

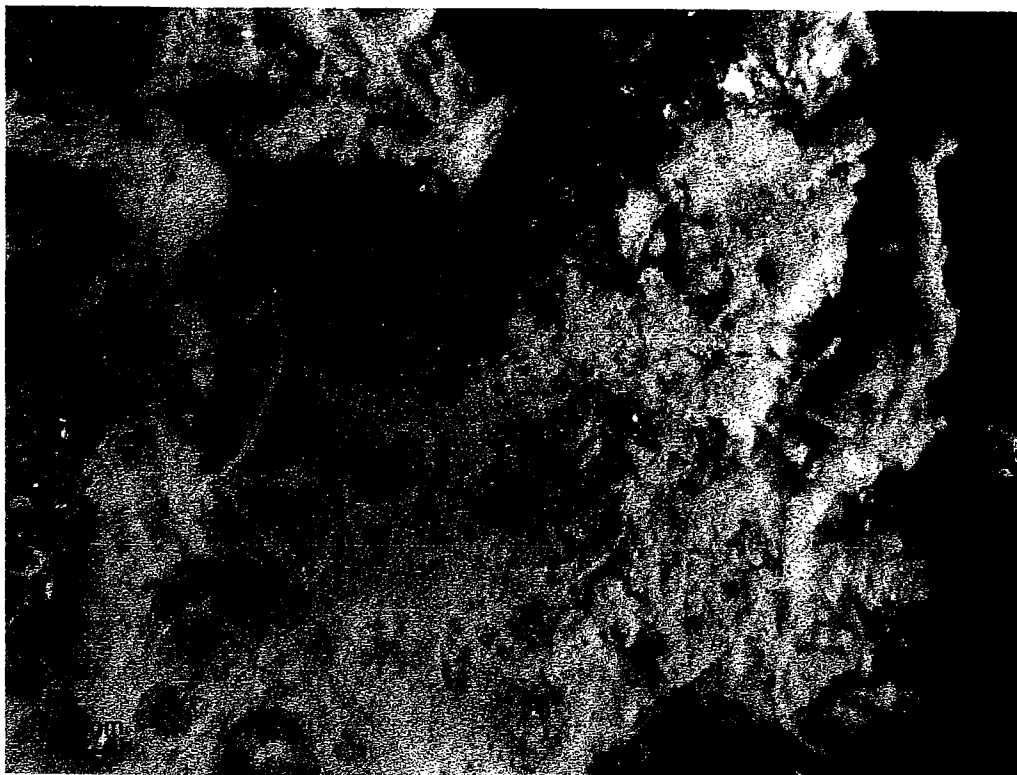
**MVA, Inc.****PLM Constituent Analysis****Date:** 3/5/03**MVA #:** 5394**Location:** OB9, 16th Floor, Fan Room**Sample I.D. #:** N0320**Client Sample I.D. #:** OB9-022603-02**Examination using the stereomicroscope:** White powder with brass-colored flakes and white fibers.

<u>CONSTITUENT</u>	<u>%</u>	<u>CONSTITUENT</u>	<u>%</u>	<u>CONSTITUENT</u>	<u>%</u>
Fibers:		Pigment:		Fillers:	
Cotton	---	Binders:		Diatoms	---
Fiberglass		Kaolinite (-)	---	Iron Chromite	---
Filament	---	Montmorillonite (-)	---	Iron Oxide	---
Wool	---	<b>Gypsum</b>	~45	<b>Limestone</b>	*
Mineral Wool	---	<b>Anhydrite</b>	<1	<b>Magnetite</b>	<1
Hair	---	Portland Cement	---	Mica	---
Paper/Wood		Lime (hydrated)	---	Perlite	---
Chem. Proc.	---	<b>Precipitated</b>		Synthetic Foam	---
Mech. Proc.	---	<b>Carbonate</b>	*	Pumice	---
Synthetic	---	Starch (-)	---	Quartz	---
				Talc	---
				<b>Vermiculite</b>	~37

Asbestos Minerals

<b>Chrysotile</b>	~18	Anthophyllite	---	Tremolite/	
Amosite	---	Crocidolite	---	Actinolite	---

**Comments:** \*Minor limestone/precipitated carbonate are included in the gypsum percentage.**Analyst:** Randy Boltin



Photomicrograph of MVA5394-N0320.



PLM photomicrograph of MVA5394-N0320.

**MVA, Inc.****SEM Constituent Analysis****Date:** 3/15/03**MVA #:** 5394

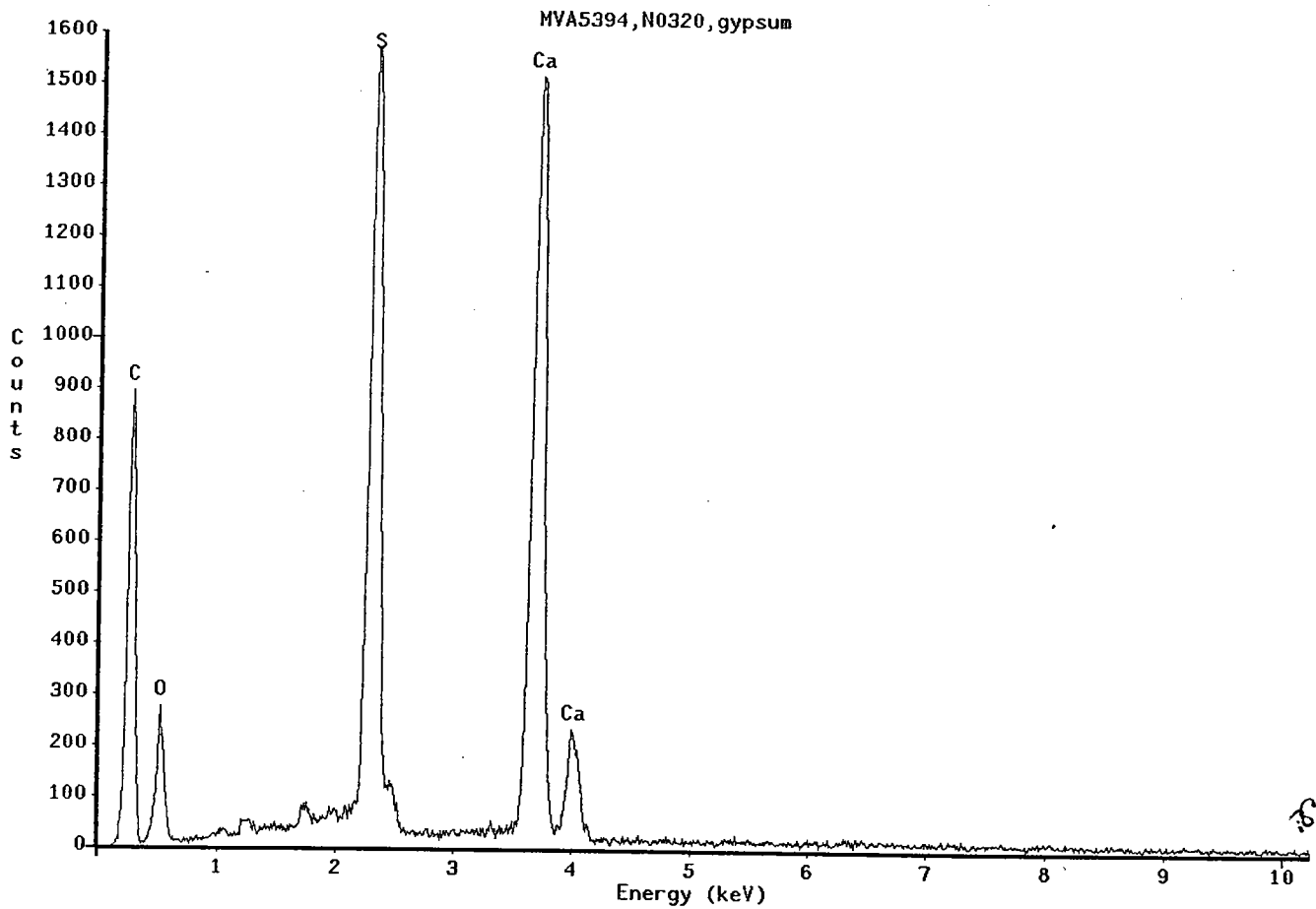
\*Particles identified are consistent in morphology and elemental composition with known references.

**Sample I.D. #:** N0320

<u>CONSTITUENT</u>	<u>PRESENT</u>	<u>CONSTITUENT</u>	<u>PRESENT</u>
<b>Fibers:</b>		<b>Pigments:</b>	
Glass	---	Titanium	---
Mineral Wool	---	Barium	---
Other	---	Zinc	---
		Other	---
<b>Fillers:</b>		<b>Binders:</b>	
Diatoms	---	Clay	
Fe Particle	---	Kaolin	---
Mica	---	Montmorillonite	---
Perlite	---	Other	---
Talc (elong)	---	Ca	---
Talc (platy)	---	Ca-Mg	---
Si	---	<b>Ca-S</b>	Common
<b>Vermiculite</b>	Common	Ca-Si	---
Other	---	Ca-Al-Si	---
		Ca-Fe-Al-Si	---
<b>Asbestos Minerals:</b>		Mg-Fe	---
Amosite	---	Al-Si	---
Anthophyllite	---	Others	---
<b>Chrysotile</b>	Common		
Crocidolite	---		
Tremolite/Actinolite	---		

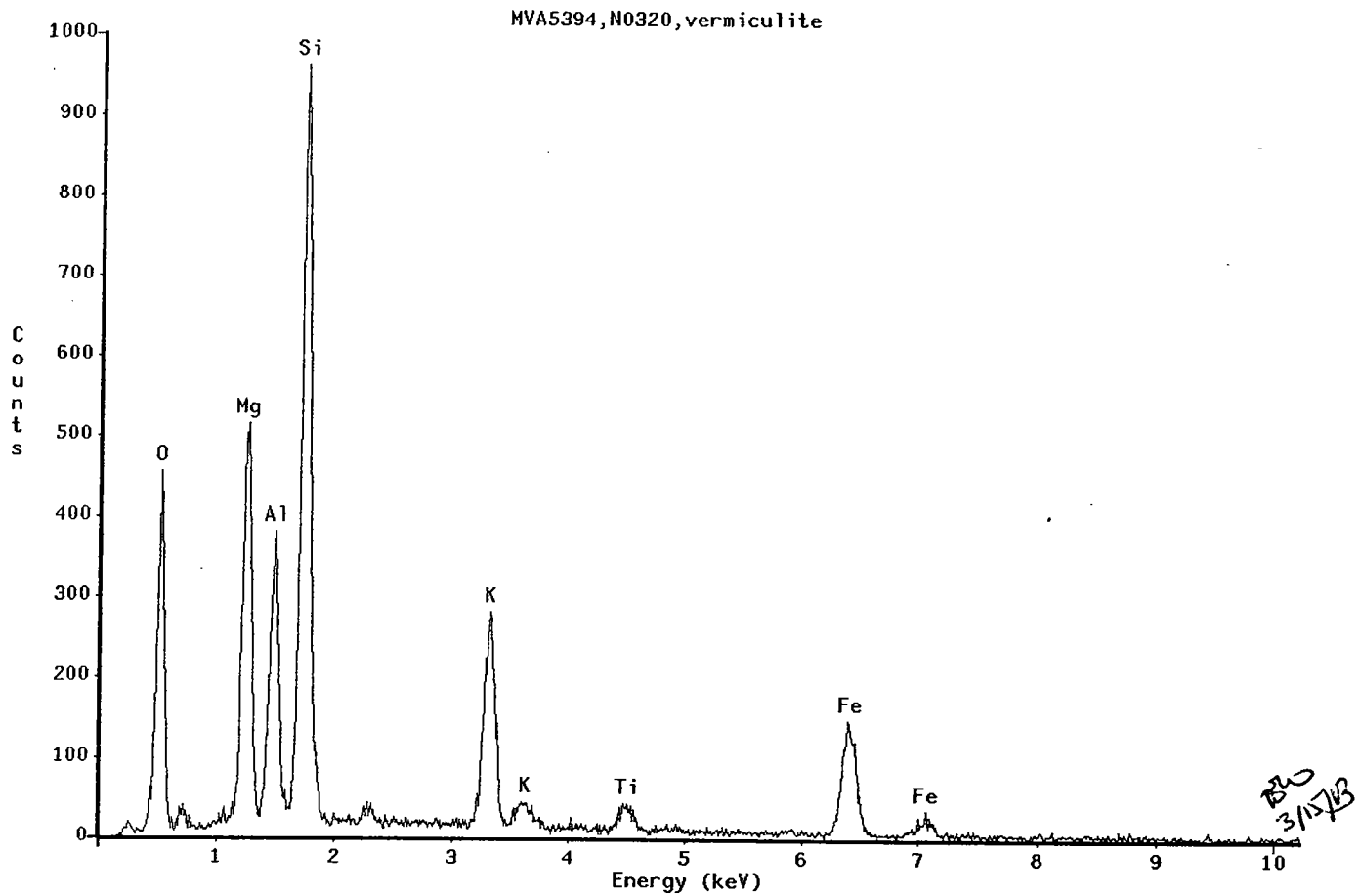
**Comments:****Microscopist:** Tim B. Vander Wood



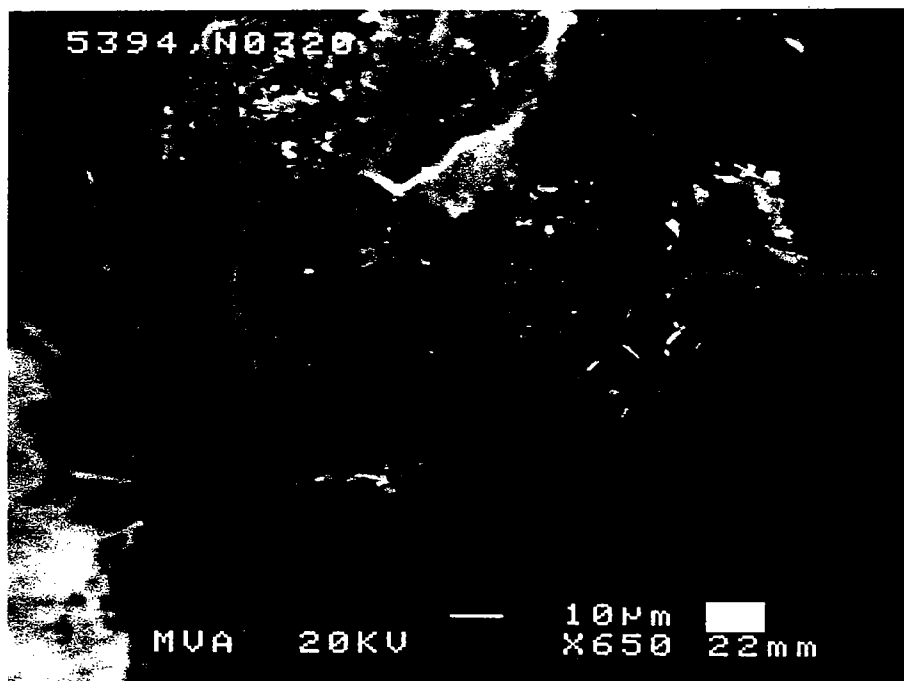


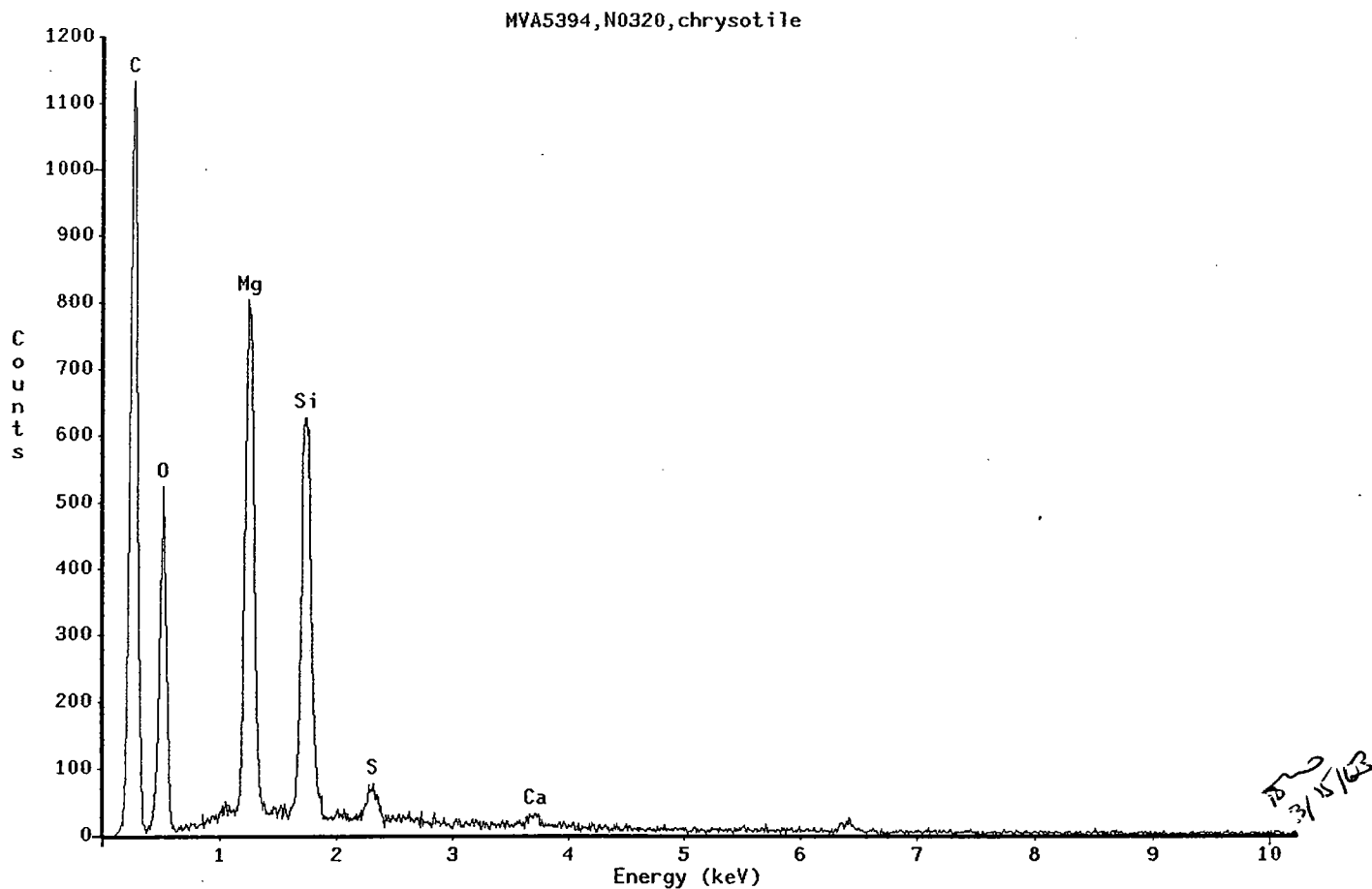
EDS spectrum (above) and SEM micrograph (below) of gypsum.  
MVA5394-N0320





EDS spectrum (above) and SEM micrograph (below) of vermiculite.  
MVA5394-N0320





EDS spectrum (above) and SEM micrograph (below) of chrysotile.  
MVA5394-N0320



**MVA, Inc.****AEM Constituent Analysis****Date:** 3/13/03**MVA #:** 5394**Sample I.D. #:** N0320

<u>CONSTITUENT</u>	<u>PRESENT</u>	<u>CONSTITUENT</u>	<u>PRESENT</u>
<b>Fibers:</b>		<b>Pigments:</b>	
Glass fibers	---	TiO <sub>2</sub>	---
Others	---	BaSO <sub>4</sub>	---
		ZnS	---
		Other	---
<b>Fillers:</b>		<b>Binders:</b>	
<b>Feldspar</b>	Trace	Clay	
Diatoms	---	Kaolin (xltln)	---
Fe Particle	---	Kaolin (calc.)	---
Mica	---	Smectite	---
Perlite	---	Ca (ppt)	---
Talc (elong)	---	Ca (xltln)	---
Talc (platy)	---	Ca-Mg, particle	---
Quartz	---	Ca-S (ppt)	---
<b>Vermiculite</b>	Common	<b>Ca-S (xltln)</b>	Common
<b>Other-Platy Mg-Si</b>	Common	Ca-Si (ppt)	---
<b>Ca-P</b>	Trace	Ca-Si, particle	---
<b>Asbestos Minerals:</b>		Ca-Al-Si	---
Amosite	---	Ca-Fe-Al-Si	---
Anthophyllite	---	Mg-Fe, particle	---
<b>Chrysotile</b>	Common	Mg-S	---
Crocidolite	---	Si (ppt)	---
<b>Tremolite/Actinolite</b>	Trace	Si (xltln)	---
		Others	---

**Comments:** Platy Mg-Si particles are a probable contaminant of chrysotile.**Analyst:** Randy Boltin

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 VERMICULITE

## POSSIBLE IDENTIFICATION

SI KA  
 CU KA  
 MG KA  
 FE KA  
 K KA OR IN LA?  
 AL KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	1.247	281	MG KA
2	1.489	101	AL KA
3	1.744	558	SI KA
4	3.318	126	K KA OR IN LA?
5	6.395	165	FE KA
6	8.024	422	CU KA

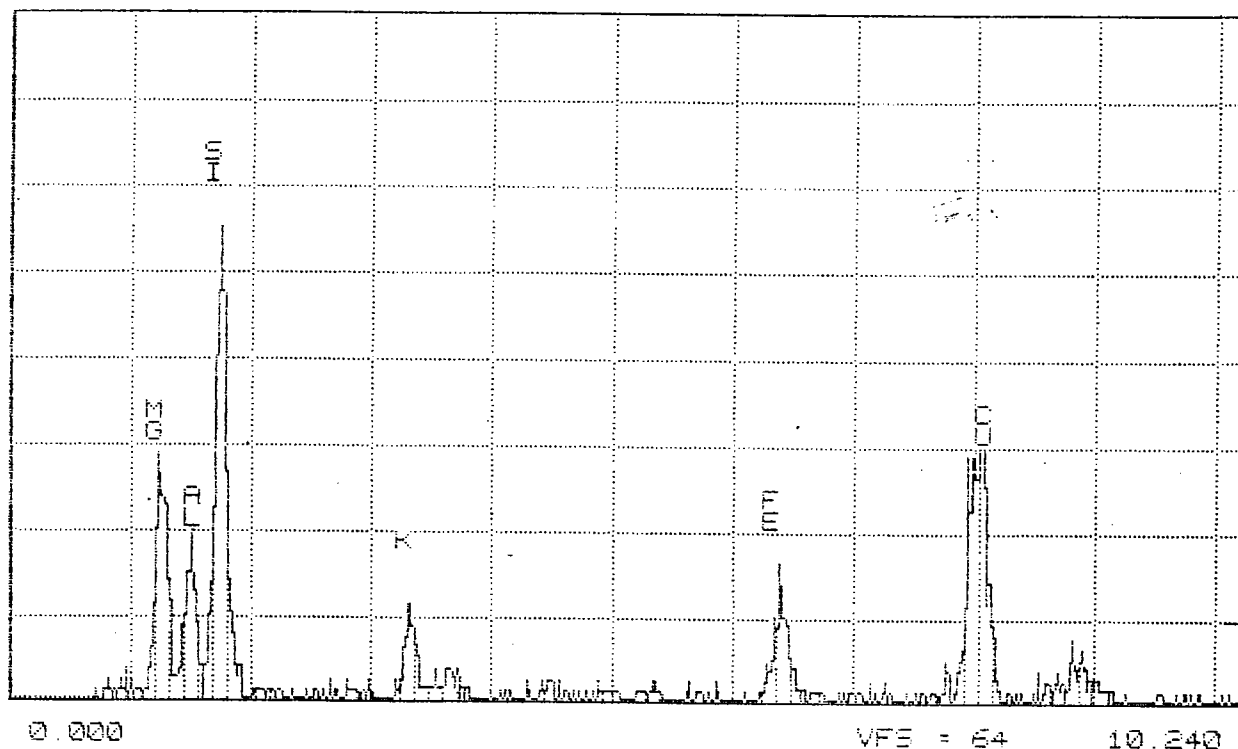
WAB  
 3/13/03

MVA INC.

THU 13-MAR-03 16:43

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



121 MVA5394-N0320 VERMICULITE

AEM spectrum of vermiculite.  
 MVA5394-N0320

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 CA-S PARTICLE

## POSSIBLE IDENTIFICATION

CA KA KB

S KA

CU KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	2.310	643	S KA
2	3.689	672	CA KA
3	4.015	95	CA KB
4	8.019	276	CU KA

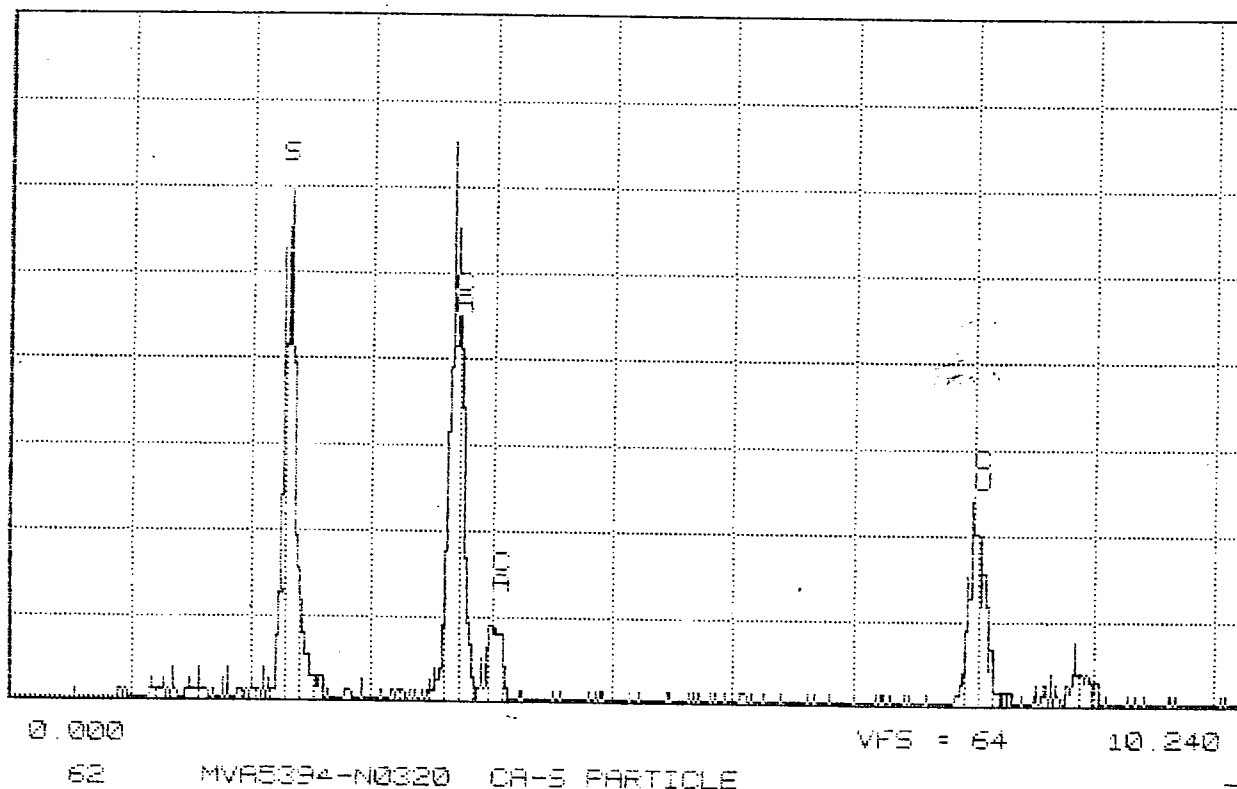
WLB  
3/13/03

MVA INC.

THU 13-MAR-03 16:21

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



MVA5394-N0320 CA-S PARTICLE

AEM spectrum of a Ca-S particle  
MVA5394-N0320

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 CHRYSOTILE

## POSSIBLE IDENTIFICATION

SI KA

MG KA

CU KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	1.260	492	MG KA
2	1.743	545	SI KA
3	8.016	479	CU KA

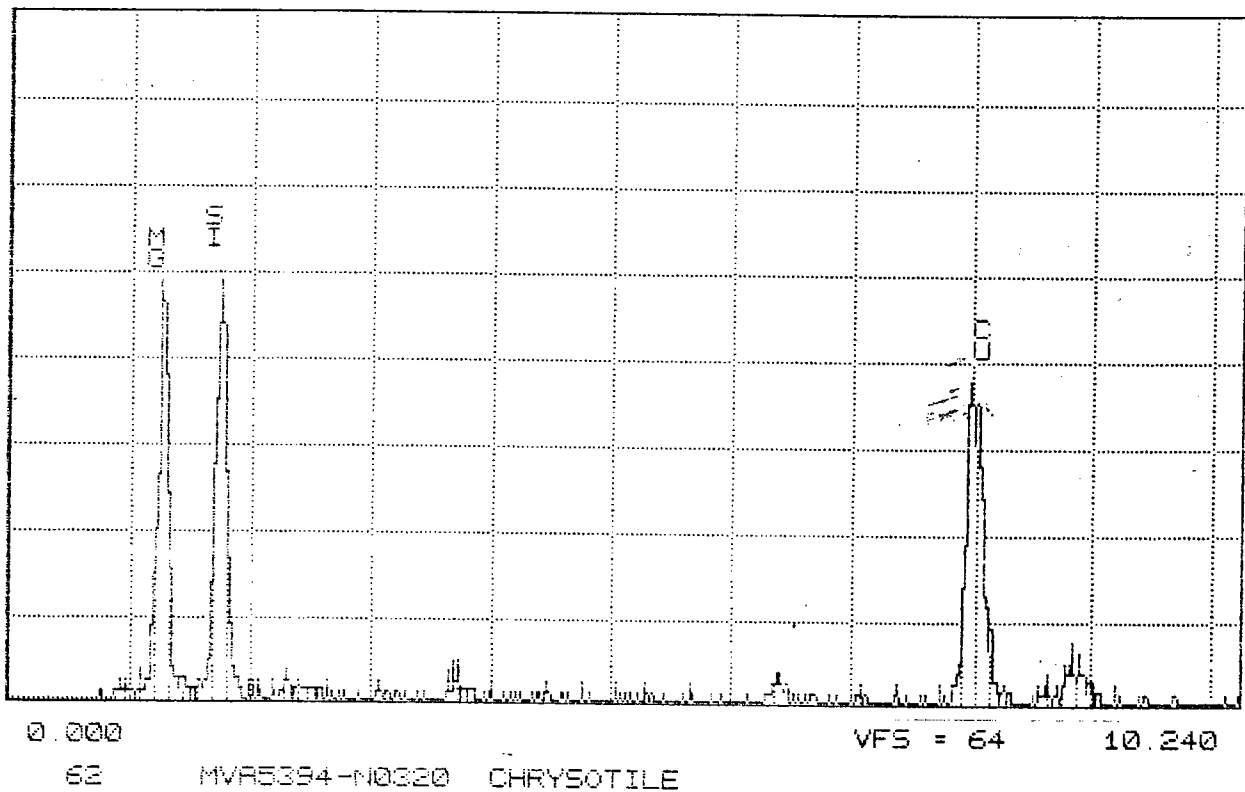
WRB  
3/13/03

MVA INC.

THU 13-MAR-03 16:32

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



AEM spectrum of chrysotile.  
MVA5394-N0320

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 PLATY MG-SI PARTICLE

## POSSIBLE IDENTIFICATION

SI KA  
 MG KA  
 CU KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	1.251	628	MG KA
2	1.743	763	SI KA
3	8.030	311	CU KA

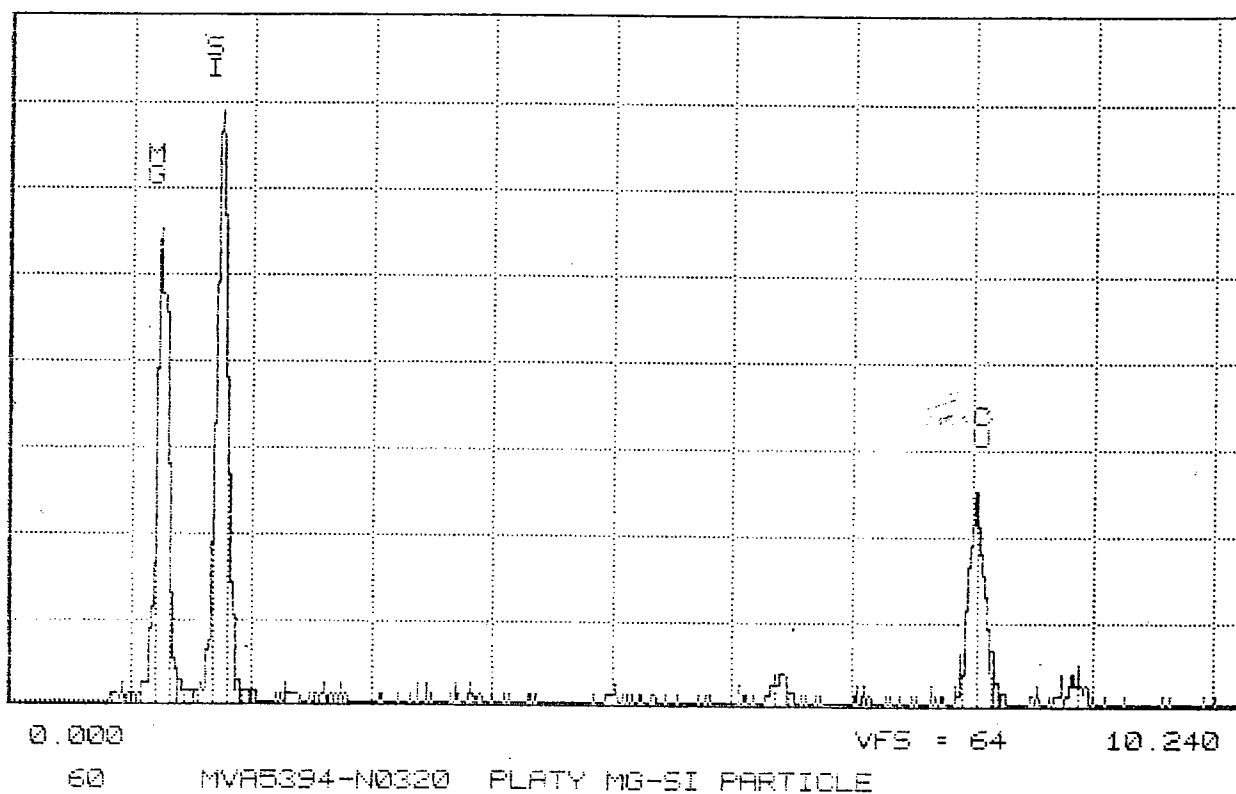
WAB  
 3/13/03

MVA INC.

THU 13-MAR-03 16:27

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



AEM spectrum of a platy Mg-Si particle.  
 MVA5394-N0320



## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 ALKALI FELDSPAR

## POSSIBLE IDENTIFICATION

SI KA  
 K KA OR IN LA?  
 AL KA  
 CU KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	1.476	466	AL KA
2	1.744	2273	SI KA
3	3.318	708	K KA OR IN LA?
4	8.030	412	CU KA

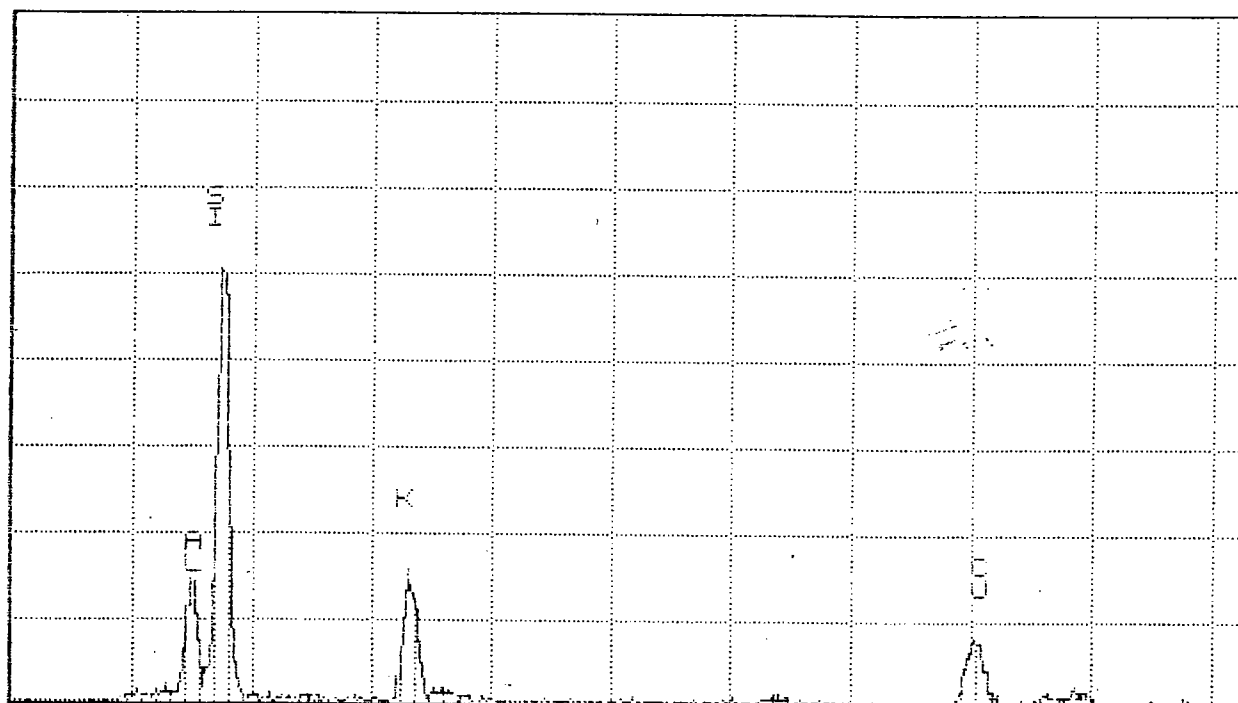
WRB  
 3/13/03

MVA INC.

THU 13-MAR-03 16:52

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



0.000

VFS = 256

10.240

71

MVA5394-N0320 ALKALI FELDSPAR

AEM spectrum of alkali feldspar.  
 MVA5394-N0320

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 TREMOLITE-ACTINOLITE FIBER

## POSSIBLE IDENTIFICATION

CU KA KB LA

SI KA

MG KA

CA KA KB

FE KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	0.957	204	CU LA
2	1.254	1901	MG KA
3	1.743	5563	SI KA
4	3.689	1002	CA KA
5	4.011	135	CA KB
6	6.392	382	FE KA
7	8.024	10506	CU KA
8	8.899	1459	CU KB

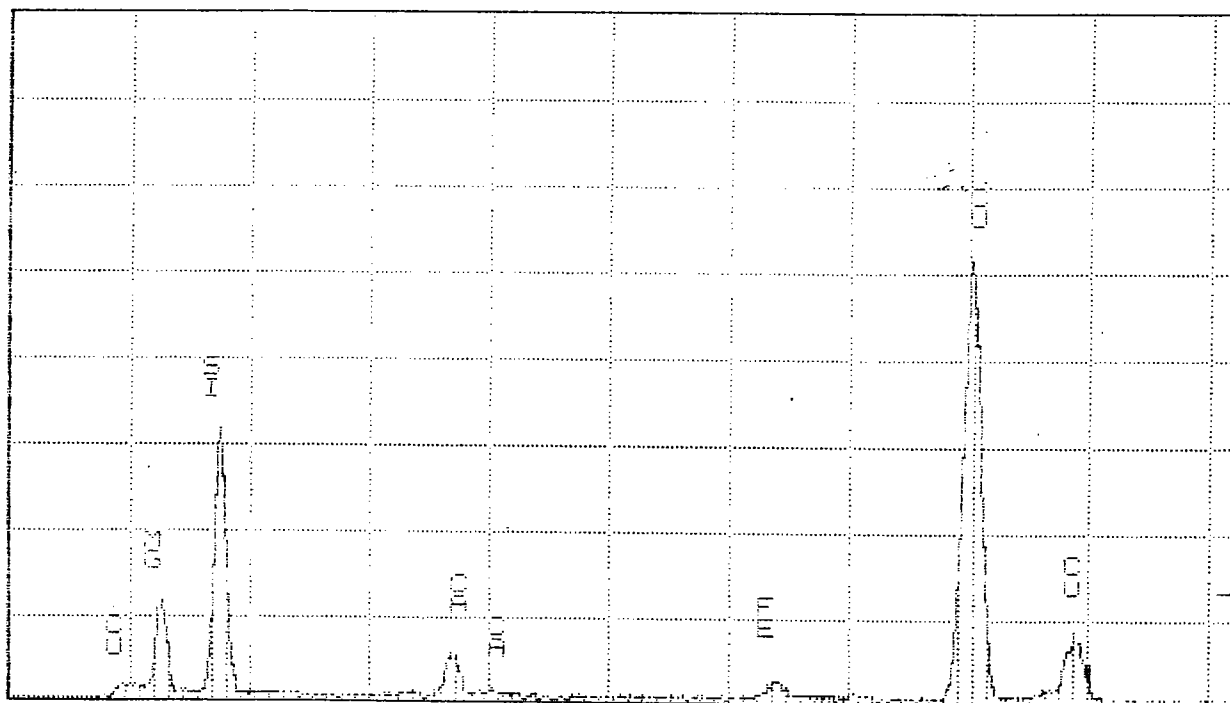
WRD  
3/13/03

MVA IND

THU 13-MAR-03 17:05

Cursor: 0.000keV = 0

ROI (1) 0.000: 0.000



0.000

VFS = 1024 10.240

75

MVA5394-N0320 TREMOLITE-ACTINOLITE FIBER

AEM spectrum of a tremolite-actinolite fiber.  
MVA5394-N0320

## QUALITATIVE ELEMENT IDENTIFICATION

SAMPLE ID: MVA5394-N0320 CA-P PARTICLE

## POSSIBLE IDENTIFICATION

CA KA KB

CU KA KB

P KA

## PEAK LISTING

	ENERGY	AREA	EL. AND LINE
1	2.012	263	P KA
2	3.687	612	CA KA
3	4.017	83	CA KB
4	8.019	360	CU KA
5	8.891	66	CU KB

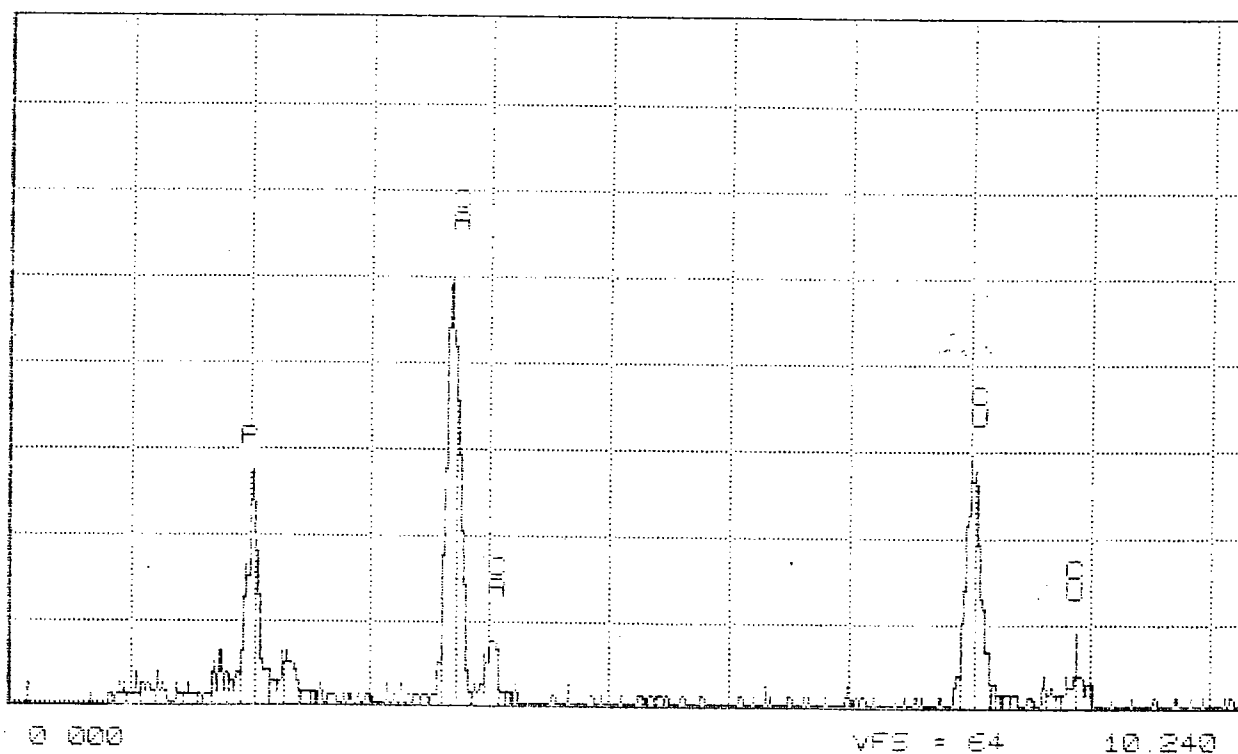
*WAB*  
*3/13/03*

MVA INC.

THU 13-MAR-03 16:30

Channel: 0.000keV = 0

ROI (1) 0.000: 0.000



MVA5394-N0320 CA-P PARTICLE

AEM spectrum of a Ca-P particle.  
 MVA5394-N0320

**MVA, Inc.**

**Acid Soluble Weight Percent Determination**

**Date:** 3/5/03

**MVA#:** 5394

**Sample I.D.#:** N0320

**Initial Weights**

1.	Vial w/lid	4.73157
2.	Vial + Sample	4.96372
3.	Sample Weight (S2-S1)	0.23215
4.	Filter (in container)	10.07327

**Weights Following Acid Treatment**

5.	Filter + Sample	10.16781
6.	Insoluble Residue (S5-S4)	0.09454
7.	Soluble Fraction (S3-S6)	0.13761

**Calculation**

8.	% Soluble (S7/S3) x 100%	~59%
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**Comments:**

**Analyst:** William L. Turner, Jr.

